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L43 ANSWER 1 OF 2 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

AN 1994:287655 BIOSIS

DN PREV199497300655

TI **Flow cytometric analysis** of adhesion

molecule and activation markers expression on human gastric
intraepithelial lymphocytes and epithelial cells in patients with H.
pylori infection.

AU Fan, X. J.; Long, A.; Fan, X. G.; Keeling, P. W. N.; Kelleher, D.

CS Dep. Clin. Med., St. James Hosp., Trinity Coll., Dublin Ireland

SO Gastroenterology, (1994) Vol. 106, No. 4 SUPPL., pp. A1025.

Meeting Info.: 95th Annual Meeting of the American Gastroenterological
Association New Orleans, Louisiana, USA May 15-18, 1994
ISSN: 0016-5085.

DT **Conference**

LA English

CC **General Biology - Symposia, Transactions and Proceedings of**

Conferences, Congresses, Review Annuals 00520

Cytology and Cytochemistry - Human *02508

Biochemical Studies - General 10060

Biochemical Studies - Proteins, Peptides and Amino Acids 10064

Biochemical Studies - Carbohydrates 10068

Pathology, General and Miscellaneous - Inflammation and Inflammatory
Disease *12508

Metabolism - General Metabolism; Metabolic Pathways *13002

Metabolism - Metabolic Disorders *13020

Digestive System - Pathology *14006

Blood, Blood-Forming Organs and Body Fluids - Blood Cell Studies *15004

Blood, Blood-Forming Organs and Body Fluids - Lymphatic Tissue and

Reticuloendothelial System *15008

Immunology and Immunochemistry - Bacterial, Viral and Fungal *34504

Medical and Clinical Microbiology - Bacteriology *36002

BC Aerobic Helical or Vibrioid Gram-Negatives 06210

Hominidae *86215

IT Major Concepts

Blood and Lymphatics (Transport and Circulation); Cell Biology;
Gastroenterology (Human Medicine, Medical Sciences); Immune System
(Chemical Coordination and Homeostasis); Infection; Metabolism;
Pathology

IT Miscellaneous Descriptors

CELL-MEDIATED IMMUNITY; DUODENAL ULCER; GASTRITIS; MEETING ABSTRACT

ORGN Super Taxa

Aerobic Helical or Vibrioid Gram-Negatives: Eubacteria, Bacteria;

Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia

ORGN Organism Name

aerobic helical or vibrioid gram-negative bacteria (Aerobic Helical or
Vibrioid Gram-Negatives); Helicobacter pylori (Aerobic Helical or
Vibrioid Gram-Negatives); Hominidae (Hominidae)

ORGN Organism Superterms

animals; bacteria; chordates; eubacteria; humans; mammals;
microorganisms; primates; vertebrates

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L43 ANSWER 2 OF 2 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
 AN 1993:355156 BIOSIS
 DN PREV199345038581
 TI **Flow cytometric analysis** of intraepithelial lymphocytes from human small intestinal biopsies reveals populations of CD4-positive CD8-positive and CD8-alpha-alpha-positive cells.
 AU Lynch, S. (1); Kelleher, D.; Feighery, C.; Weir, D.; O'Farrelly, C.
 CS (1) Dep. Immunol., St. James's Hospital, Dublin 8 Ireland
 SO Gastroenterology, (1993) Vol. 104, No. 4 SUPPL., pp. A1049.
 Meeting Info.: 94th Annual Meeting of the American Gastroenterological Association Boston, Massachusetts, USA May 15-21, 1993
 ISSN: 0016-5085.
 DT **Conference**
 LA English
 CC **General Biology - Symposia, Transactions and Proceedings of Conferences, Congresses, Review Annuals 00520**
Cytology and Cytochemistry - Human *02508
 Digestive System - Physiology and Biochemistry *14004
 Blood, Blood-Forming Organs and Body Fluids - Lymphatic Tissue and Reticuloendothelial System *15008
 Immunology and Immunochemistry - Immunopathology, Tissue Immunology *34508
 BC Hominidae *86215
 IT Major Concepts
 Blood and Lymphatics (Transport and Circulation); Cell Biology; Clinical Immunology (Human Medicine, Medical Sciences); Digestive System (Ingestion and Assimilation)
 IT Chemicals & Biochemicals
 CD8
 IT Miscellaneous Descriptors
 ABSTRACT; GASTROINTESTINAL TRACT; SINGLE CELL SUSPENSION
 ORGN Super Taxa
 Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia
 ORGN Organism Name
 Hominidae (Hominidae)
 ORGN Organism Superterms
 animals; chordates; humans; mammals; primates; vertebrates
 RN 59596-56-4 (CD8)

=> d all tot

L80 ANSWER 1 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
 AN 2001:484081 BIOSIS
 DN **PREV200100484081**
 TI Double biological **microchip**: Use for investigation of biochemical reactions.
 AU Zasedateleva, O. A. (1); Krylov, A. S. (1); Sharonov, A. Yu. (1); Mirzabekov, A. D. (1)
 CS (1) Engelhardt Institute of Molecular Biology, Russian Academy of Sciences, ul. Vavilova, 32, Moscow, 117984 Russia
 SO Sensornye Sistemy, (January March, 2001) Vol. 15, No. 1, pp. 85-92. print.
 ISSN: 0235-0092.
 DT Article
 LA Russian
 SL English; Russian
 AB A new, so called double biological **microchip** (double **biochip**) was created for investigation of biochemical reactions. The **biochip** is a glass slide bearing hundreds microscopic gel pads. Immobilized in each pad is a short piece of DNA up to hundreds of nucleotides. The oligonucleotides are capable of hybridizing with fluorescently labeled complementary fragments of DNA. The level of hybridization is measured by the intensity of fluorescence signal. The proposed **method** is based on parallel fabrication of two **biochips** followed by their parallel hybridization with DNA or

proteins. One of the **biochips** is then used to study a particular reaction, the other serves as the control. Melting of two oligonucleotides was chosen as a model reaction: one oligonucleotide was melted under standard conditions, whereas the other was melted in the presence of specific ligand. The **method** have been used to study the influence of some factors (ionic strength, ligands) on the melting of double stranded oligonucleotides on the **biochip**. The **method** is suitable for all kinds of processes: melting, hybridization, enzyme reactions (PCR, ligation).

- CC Genetics and Cytogenetics - General *03502
 Biochemical Studies - Nucleic Acids, Purines and Pyrimidines *10062
- IT Major Concepts
 Molecular Genetics (Biochemistry and Molecular Biophysics); Equipment, Apparatus, Devices and Instrumentation
- IT Chemicals & Biochemicals
 DNA; oligonucleotides
- IT Methods & Equipment
 double biological **microchip**: equipment
- IT Miscellaneous Descriptors
 biochemical reactions; hybridization
- L80 ANSWER 2 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
 AN 2001:464502 BIOSIS
 DN **PREV200100464502**
 TI Biotechnology: Updates and new developments.
 AU Chang, Sushila K. (1)
 CS (1) Centre for Life Sciences and Chemical Technology, NgeeAnn Polytechnic, Singapore Singapore
 SO Biomedical and Environmental Sciences, (June, 2001) Vol. 14, No. 1-2, pp. 32-39. print.
 Meeting Info.: Proceedings of the 3rd Asian Conference on Food Safety and Nutrition Beijing, China October 03-06, 2000 Chinese Academy of Preventive Medicine
 . ISSN: 0895-3988.
- DT Conference
 LA English
 SL English
- CC General Biology - Symposia, Transactions and Proceedings of Conferences, Congresses, Review Annuals *00520
Cytology and Cytochemistry - Animal *02506
Cytology and Cytochemistry - Human *02508
 Food Technology - General; Methods *13502
 Food and Industrial Microbiology - General and Miscellaneous *39008
- IT Major Concepts
 Bioprocess Engineering; Foods
- IT Parts, Structures, & Systems of Organisms
 stem cells
- IT Methods & Equipment
biochips
- IT Miscellaneous Descriptors
 bioinformatics; biotechnology; computer databases; food development; food processing; genetically modified food: food; genetically modified plants; pharmacogenomics; Meeting Abstract
- ORGN Super Taxa
 Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia
- ORGN Organism Name
 human (Hominidae)
- ORGN Organism Superterms
 Animals; Chordates; Humans; Mammals; Primates; Vertebrates

- L80 ANSWER 3 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
 AN 2001:454944 BIOSIS
 DN **PREV200100454944**
 TI **Biochip** detection system.
 AU Watson, Robert Malcolm, Jr. (1); Chaudhry, Haseeb R.; Lee, James S.
 CS (1) San Leandro, CA USA

ASSIGNEE: Alpha Innotech Corporation, San Leandro, CA, USA
PI US 6271042 August 07, 2001
SO Official Gazette of the United States Patent and Trademark Office Patents,
(Aug. 7, 2001) Vol. 1249, No. 1, pp. No Pagination. e-file.
ISSN: 0098-1133.
DT Patent
LA English
AB A **biochip** detection system detects and locates samples that are
labeled with multiple fluorescent tags and are located on a
biochip. This **biochip** detection system includes a charge
coupled device (CCD) sensor, a broad spectrum light source, a lens, a
light source filter, and a sensor filter. The CCD sensor comprises two
dimensional CCD **arrays** to simultaneously detect light waves from
at least a substantial portion of the **biochip**. The broad
spectrum light source is optically coupled to the CCD sensor and is
configured to be utilized with a variety of different fluorescent tags
which have differing excitation wavelengths.
NCL 436172000
IT Major Concepts
Equipment, Apparatus, Devices and Instrumentation
IT Chemicals & Biochemicals
fluorescent tags
IT Methods & Equipment
biochip detection system: laboratory equipment; charge
coupled device: equipment
L80 ANSWER 4 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:358714 BIOSIS
DN **PREV200100358714**
TI The Flow-Thru **ChipTM**: A three-dimensional **biochip**
platform.
AU Steel, Adam (1); Torres, Matt (1); Hartwell, John (1); Yu, Yong-Yi (1);
Ting, Nan (1); Hoke, Glenn (1); Yang, Hongjun (1)
CS (1) Gene Logic, Inc., Gaithersburg, MD USA
SO Schena, Mark. (2000) pp. 87-117. Microarray biochip technology. print.
Publisher: Eaton Publishing 154 E. Central Street, Natick, MA, 01760, USA.
ISBN: 1-881299-37-6 (cloth).
DT Book
LA English
SL English
CC Biochemical Studies - Nucleic Acids, Purines and Pyrimidines *10062
Genetics and Cytogenetics - General *03502
IT Major Concepts
Molecular Genetics (Biochemistry and Molecular Biophysics); Equipment,
Apparatus, Devices and Instrumentation; **Methods** and
Techniques
IT Chemicals & Biochemicals
DNA: **analysis**, synthesis; RNA: **analysis**
IT Methods & Equipment
Flow-Thru **Chip**: applications, **chip** geometry,
cleaning, design, laboratory equipment, performance, preparation,
three-dimensional **biochip** platform
IT Miscellaneous Descriptors
Book Chapter
L80 ANSWER 5 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:355518 BIOSIS
DN **PREV200100355518**
TI **Microarray biochip** technology.
AU Schena, Mark (1)
CS (1) TeleChem/arrayit.com, 524 E. Weddell Drive, Suite 3, Sunnyvale, CA,
94089-2115 USA
SO Schena, Mark. (2000) pp. i-xiv, 1-298, A1-A32. Microarray biochip
technology. print.
Publisher: Eaton Publishing 154 E. Central Street, Natick, MA, 01760, USA.
ISBN: 1-881299-37-6 (cloth).

DT Book .
LA English
SL English
AB This book includes thirteen separately authored chapters on all of the main areas of **microarray** technology, including theory, sample preparation and labeling, manufacturing **methods**, fluorescent imaging, and data **analysis** and mining. It is written for anyone interested in **biochips**. The volume includes bibliographical references, a list of selected suppliers, and an index.

CC Biochemical Studies - Nucleic Acids, Purines and Pyrimidines *10062
Genetics and Cytogenetics - General *03502

IT Major Concepts
Molecular Genetics (Biochemistry and Molecular Biophysics); Equipment, Apparatus, Devices and Instrumentation; **Methods** and Techniques

IT Chemicals & Biochemicals
DNA: **analysis**

IT Methods & Equipment
biochip: laboratory equipment; **microarray**
biochip techniques: Molecular Biology Techniques and Chemical Characterization, **analytical method**, molecular genetic **method**

L80 ANSWER 6 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:334745 BIOSIS
DN **PREV200100334745**
TI **Method** of making **biochips** and the **biochips** resulting therefrom.
AU Hahn, Soonkap (1); Fagnani, Roberto
CS (1) San Clemente, CA USA
ASSIGNEE: Biocept, Inc., Carlsbad, CA, USA
PI US 6174683 January 16, 2001
SO Official Gazette of the United States Patent and Trademark Office Patents, (Jan. 16, 2001) Vol. 1242, No. 3, pp. No Pagination. e-file.
ISSN: 0098-1133.

DT Patent
LA English
AB **Methods** for preparing a **biochip** are provided herein wherein the biomolecular probe to be used with the **biochip** is alternatively bound to a hydrogel prepolymer prior to or simultaneously with polymerization of the prepolymer. In particularly preferred embodiments, a polyurethane-based hydrogel prepolymer is derivatized with an organic solvent soluble biomolecule, such as a peptide nucleic acid probe in aprotic, organic solvent. Following derivatization of the prepolymer, an aqueous solution, for example sodium bicarbonate, preferably buffered to a pH of about 7.2 to about 9.5, is added to the derivatized prepolymer solution to initiate polymerization of the hydrogel. Alternatively, a water soluble biomolecule, such as DNA or other oligonucleotide, is prepared in an aqueous solution and added to the polyurethane-based hydrogel prepolymer such that derivatization and polymerization occur, essentially, simultaneously. While the hydrogel is polymerizing, it is microspotted onto a solid substrate, preferably a silanated glass substrate, to which the hydrogel microdroplet becomes covalently bound. Most preferably the hydrogel microdroplets are at least about 30 μm thick, for example about 50 μm to about 100 μm thick. The resulting **biochips** are particularly useful for gene discovery, gene characterization, functional gene **analysis** and related studies.

NCL 435006000

IT Major Concepts
Molecular Genetics (Biochemistry and Molecular Biophysics); Bioprocess Engineering; **Methods** and Techniques

IT Chemicals & Biochemicals
biomolecular probe

IT Methods & Equipment
functional gene **analysis**: molecular **method**; gene

characterization: molecular **method**; gene discovery: molecular **method**

IT Miscellaneous Descriptors
biochip

L80 ANSWER 7 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

AN 2001:324845 BIOSIS

DN **PREV200100324845**

TI **Microchips, microarrays, biochips** and

nanochips: Personal laboratories for the 21st century.

AU Kricka, Larry J. (1)

CS (1) Department of Pathology and Laboratory Medicine, University of Pennsylvania Medical Center, Philadelphia, PA, 19104 USA

SO Clinica Chimica Acta, (May, 2001) Vol. 307, No. 1-2, pp. 219-223. print. ISSN: 0009-8981.

DT Article

LA English

SL English

AB Micro miniaturization of **analytical** procedures is having significant impact on diagnostic testing, and will enable highly complex clinical testing to be miniaturized and permit testing to move from the central laboratory into non-laboratory settings. The diverse range of micro **analytical** devices includes **microchips**, gene **chips**, bioelectronic **chips**. They have been applied to several clinically important **assays** (e.g., PCR, **immunoassay**). The main advantages of the new devices are integration of multiple steps in complex **analytical** procedures, diversity of application, sub-microliter consumption of reagents and sample, and portability. These devices form the basis of new and smaller **analyzers** (e.g., capillary electrophoresis) and may ultimately be used in even smaller devices useful in decentralized testing (lab-on-a-**chip**, personal laboratories). The impact of **microchips** on healthcare costs could be significant via timely intervention and monitoring, combined with improved treatments (e.g., **microchip**-based pharmacogenomic tests). Empowerment of health consumers to perform self-testing is limited, but **microchips** could accelerate this process and so produce a level of self-awareness of biochemical and genetic information hitherto unimaginable. The next level of miniaturization is the **nanochip** (nanometer-sized features) and the technological foundation for these futuristic devices is discernable in nanotubes and self-assembling molecular structures.

CC Biophysics - Bioengineering *10511

IT Major Concepts

Biomaterials

IT Methods & Equipment

biochips: equipment; **microarrays**:

analytical method; **microchips**: equipment;

nanochips: equipment

IT Miscellaneous Descriptors

microminiaturization; personal laboratories

L80 ANSWER 8 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

AN 2001:145920 BIOSIS

DN **PREV200100145920**

TI Multiparametric microsensor **chips** for screening applications.

AU Ehret, R.; Baumann, W.; Brischwein, M.; Lehmann, M.; Henning, T.; Freund, I.; Drechsler, S.; Friedrich, U.; Hubert, M.-L.; Motrescu, E.; Kob, A.; Palzer, H.; Grothe, H.; Wolf, B. (1)

CS (1) Heinz-Nixdorf-Lehrstuhl fuer Medizinische Elektronik, Technische Universitaet Muenchen, Arcisstrasse 21, 80333, Muenchen: ralf.ehret@biologie.uni-rostock.de Germany

SO Fresenius' Journal of Analytical Chemistry, (January, 2001) Vol. 369, No. 1, pp. 30-35. print.

ISSN: 0937-0633.

DT Article

LA English

SL English

AB The identification of drug targets for pharmaceutical screening can be greatly accelerated by gene databases and expression studies. The identification of leading compounds from growing libraries is realized by **high throughput** screening platforms. Subsequently, for optimization and validation of identified leading compounds studies of their functionality have to be carried out, and just these functionality tests are a limiting factor. A rigorous preselection of identified compounds by in vitro cellular screening is necessary prior to using the drug candidates for the further time consuming and expensive stage, e.g. in animal models. Our efforts are focused to the parallel development, adaptation and integration of different microelectronic sensors into miniaturized **biochips** for a multiparametric, functional on-line **analysis** of living cells in physiologically environments. Parallel and on-line acquisition of data related to different cellular targets is required for advanced stages of drug screening and for economizing animal tests.

CC **Cytology and Cytochemistry - Animal *02506**
Cytology and Cytochemistry - Human *02508
Physiology, General and Miscellaneous - General *12002
Pathology, General and Miscellaneous - Therapy *12512
Pharmacology - General *22002
Pharmacology - Clinical Pharmacology *22005

BC Animalia - Unspecified 33000

IT Major Concepts
Equipment, Apparatus, Devices and Instrumentation; **Methods**
and Techniques; Pharmacology

IT Chemicals & Biochemicals
drug candidates: evaluation, pharmaceuticals

IT Methods & Equipment
SEM [scanning electron microscopy]: electron microscopy: CT, microscopy **method**; biosensors: **analytical method**, applications, equipment, molecular probe techniques; multiparametric microsensor **chips**: applications, descriptions, design, equipment, uses; pharmaceutical screening: Molecular Biology Techniques and Chemical Characterization, applications, screening **method**

IT Miscellaneous Descriptors
biochip technology: applications; biotechnology; drug targets: identification; physiology

ORGN Super Taxa
Animalia; Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia

ORGN Organism Name
LS 174T cell line (Hominidae); animals (Animalia)

ORGN Organism Superterms
Animals; Chordates; Humans; Mammals; Primates; Vertebrates

L80 ANSWER 9 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

AN 2000:469098 BIOSIS

DN **PREV200000469098**

TI Electric readout **biochips** for cell based screening.

AU Brischwein, M. (1); Baumann, W. (1); Drechsler, S. (1); Ehret, R. (1); Lehmann, M. (1); Motrescu, E. R. (1); Wolf, B. (1)

CS (1) Dept. of Biophysics, Universitaet Rostock, Wismarsche Strasse 8, D-18057, Rostock Germany

SO European Biophysics Journal, (2000) Vol. 29, No. 4-5, pp. 375. print.
Meeting Info.: 3rd European Biophysics Congress Munchen, Germany September 09-13, 2000
ISSN: 0175-7571.

DT Conference

LA English

SL English

CC **Cytology and Cytochemistry - General *02502**
General Biology - Symposia, Transactions and Proceedings of Conferences, Congresses, Review Annuals *00520
Developmental Biology - Embryology - General and Descriptive *25502

BC Organisms - Unspecified 00500

IT Major Concepts
Cell Biology; Equipment, Apparatus, Devices and Instrumentation

IT Methods & Equipment
electric readout **biochip**: biosensor, development, equipment

IT Miscellaneous Descriptors
cell based screening; Meeting Abstract

ORGN Super Taxa
Organisms

ORGN Organism Name
organism (Organisms)

L80 ANSWER 10 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2000:313756 BIOSIS
DN **PREV200000313756**
TI XNA on GoldTM: Universal platform for building intelligent **biochips**.
AU Ortigao, Flavio Ramalho (1); Mecklenburg, Michael (1); Cieplik, Michael (1)
CS (1) INTERACTIVA Biotechnology, Sedanstrasse 10, D-89077, Ulm Germany
SO Biomolecular Engineering, (May, 2000) Vol. 16, No. 5, pp. 150. print.
Meeting Info.: First International Conference on (Strept) Avidin-Biotin Technologies Alberta, Canada June 18-21, 2000
ISSN: 1389-0344.
DT Conference
LA English
SL English
CC Biochemical Methods - General *10050
Genetics and Cytogenetics - General *03502
Biochemical Studies - General *10060
Biophysics - Bioengineering *10511
Biophysics - Molecular Properties and Macromolecules *10506
General Biology - Symposia, Transactions and Proceedings of Conferences, Congresses, Review Annuals *00520

IT Major Concepts
Biochemistry and Molecular Biophysics; **Methods** and Techniques

IT Chemicals & Biochemicals
DNA; RNA; XNA on Gold; avidin: applications, uses; biomolecules: immobilization; biotin: applications, uses; **proteins**; saccharides; streptavidin: applications, uses

IT Methods & Equipment
DNA **biochips**: applications, equipment; intelligent **biochips**: applications, equipment

IT Miscellaneous Descriptors
XNA on Gold affinity **array** technology: applications; biotechnology; **microarray** technology; Meeting Abstract

RN 58-85-5 (BIOTIN)
9013-20-1 (STREPTAVIDIN)

L80 ANSWER 11 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2000:4077 BIOSIS
DN **PREV200000004077**
TI **High-throughput microarray**-based enzyme-linked immunosorbent **assay** (ELISA).
AU Mendoza, L. G. (1); McQuary, P.; Mongan, A.; Gangadharan, R.; Brignac, S.; Eggers, M.
CS (1) Genometrix, 3608 Research Forest Drive, Suite B7, The Woodlands, TX, 77381 USA
SO Biotechniques, (Oct., 1999) Vol. 27, No. 4, pp. 778-788.
ISSN: 0736-6205.
DT Article
LA English
SL English
AB A new generation **biochip** is described as capable of supporting **high-throughput** (HT), multiplexed enzyme-linked immunosorbent **assays** (ELISAs). These **biochips** consist of an optically flat, glass plate containing 96 wells formed by an

enclosing hydrophobic Teflon(R) mask. The footprint dimensions of each well and the plate precisely match those of a standard microplate. Each well contains four identical 36-element **arrays** (144 elements per well) comprising 8 different antigens and a marker **protein**.

Arrays are formed by a custom, continuous flow, capillary-based print head attached to a precise, **high-speed**, X-Y-Z robot. The **array** printing capacity of a single robot exceeds 20 000 **arrays** per day. **Arrays** are quantitatively imaged using a custom, **high-resolution**, scanning charge-coupled device (CCD) detector with an imaging **throughput** of 96 **arrays** every 30 s. Using this new process, **arrayed** antigens were individually and collectively detected using standard ELISA techniques. Experiments demonstrate that specific multiplex detection of **protein** antigens **arrayed** on a glass substrate is feasible. Because of the open **microarray** architecture, the 96-well **microarray** format is compatible with automated robotic systems and supports a low-cost, highly parallel **assay** format. Future applications of this new **high-throughput** screening (HTS) format include direct cellular **protein** expression profiling, multiplexed **assays** for detection of infectious agents and cancer diagnostics.

- CC Biophysics - General Biophysical Techniques *10504
 - Biochemical Studies - Proteins, Peptides and Amino Acids** *10064
 - Enzymes - Methods *10804
 - Immunology and Immunochemistry - General; Methods *34502
- IT Major Concepts
 - Equipment, Apparatus, Devices and Instrumentation; **Methods** and Techniques
- IT Chemicals & Biochemicals
 - proteins**
- IT Methods & Equipment
 - ELISA: detection **method**, detection/labeling techniques; **biochip**: equipment; scanning charge-coupled device detector: equipment

L80 ANSWER 12 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

AN 1999:469908 BIOSIS

DN **PREV199900469908**

TI Simultaneous multi-**analyte analysis** by **biochip** technology.

AU McConnell, I. V. (1); Lamont, J. V. (1); Fitzgerald, S. P. (1)

CS (1) R and D, Randox Laboratories Ltd., Crumlin UK

SO Clinical Chemistry and Laboratory Medicine, (June, 1999) Vol. 37, No. SPEC. SUPPL., pp. S394.

Meeting Info.: IFC-WorldLab, International Federation of Clinical and Laboratory Medicine (17th International and 13th European Congress of Clinical Chemistry and Laboratory Medicine, 1st International Congress of Clinical Molecular Biology, 31st National Congress of the Italian Society of Clinical Biochemistry and Clinical Molecular Biology) Florence, Italy June 6-11, 1999 International Federation of Clinical and Laboratory Medicine

. ISSN: 1434-6621.

DT Conference

LA English

CC Endocrine System - General *17002

Biochemical Studies - General *10060

Biophysics - General Biophysical Studies *10502

Reproductive System - General; Methods *16501

General Biology - Symposia, Transactions and Proceedings of Conferences, Congresses, Review Annuals *00520

BC Hominidae 86215

IT Major Concepts

Endocrine System (Chemical Coordination and Homeostasis); Equipment, Apparatus, Devices and Instrumentation

IT Chemicals & Biochemicals

prolactin: sex hormone; FSH [follicle stimulating hormone]: sex

• hormone; LH [luteinizing hormone]: sex hormone

IT Methods & Equipment
 biochip assay: immunoassay method
 ; chemiluminescence detection: detection **method**; fertility
 hormone **biochip**: medical equipment; sulphanamide
 biochip: medical equipment; Abbott AxSym: medical equipment;
 CCD camera: equipment

IT Miscellaneous Descriptors
 Meeting Abstract; Meeting Poster

ORGN Super Taxa
 Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia

ORGN Organism Name
 human (Hominidae)

ORGN Organism Superterms
 Animals; Chordates; Humans; Mammals; Primates; Vertebrates

RN 9002-68-0 (FSH)
 9002-68-0 (FOLLICLE STIMULATING HORMONE)
 9002-67-9 (LUTEINIZING HORMONE)
 9002-62-4 (PROLACTIN)

L80 ANSWER 13 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1999:402404 BIOSIS
DN **PREV199900402404**
TI Simultaneous multi-analyte analysis by biochip
 technology.

AU Lamont, J. V. (1); McConnell, R. I. (1); Fitzgerald, S. P. (1)
CS (1) Radox Laboratories Limited, Diamond Road, Crumlin UK
SO Clinical Chemistry, (June, 1999) Vol. 45, No. 6 PART 2, pp. A102-A103.
 Meeting Info.: 51st Annual Meeting of the American Association of Clinical
 Chemistry New Orleans, Louisiana, USA July 25-29, 1999 American
 Association of Clinical Chemistry
 . ISSN: 0009-9147.

DT Conference
LA English
CC Biochemical Methods - General *10050
 Radiation - General *06502
 Biochemical Studies - General *10060
 Chemotherapy - General; Methods; Metabolism *38502
 Endocrine System - General *17002
 General Biology - Symposia, Transactions and Proceedings of Conferences,
 Congresses, Review Annuals *00520

IT Major Concepts
 Biochemistry and Molecular Biophysics; **Methods** and Techniques

IT Chemicals & Biochemicals
 lutenizing hormone [luteinizing hormone]; prolactin; sulfadiazine;
 sulfamethazine; sulfathiazole; sulfonamide antibiotics; FSH

IT Methods & Equipment
 immunoassay: analytical method; Abbott
 AxSym **assay: analytical method**; Delfia
 assay: analytical method; HPLC [high
 performance liquid chromatography]: **analytical method**
 ; LCMS [liquid chromatography-mass spectrometry]: **analytical**
 method

IT Miscellaneous Descriptors
 biochip; Meeting Abstract; Meeting Poster

RN 9002-68-0 (FSH)
 9002-67-9 (LUTEINIZING HORMONE)
 9002-62-4 (PROLACTIN)
 68-35-9 (SULFADIAZINE)
 57-68-1 (SULFAMETHAZINE)
 72-14-0 (SULFATHIAZOLE)

L80 ANSWER 14 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1999:293931 BIOSIS
DN **PREV199900293931**
TI Multiparametric **biochips** for cell-based screening.

AU Brischwein, Martin (1); Baumann, Werner (1); Lehmann, Mirko (1); Ehret, Ralf (1); Schwinde, Anne (1); Wolf, Bernhard (1)
 CS (1) Fachbereich Biologie, Biophysik, Universitaet Rostock, Wismarsche Strasse 8, 18057, Rostock Germany
 SO European Journal of Cell Biology, (1999) Vol. 78, No. SUPPL. 49, pp. 83. Meeting Info.: 23rd Annual Meeting of the German Society for Cell Biology Rostock, Germany March 14-18, 1999 German Society for Cell Biology . ISSN: 0171-9335.
 DT Conference
 LA English
 CC Biophysics - General Biophysical Techniques *10504
 Cytology and Cytochemistry - Human *02508
 General Biology - Symposia, Transactions and Proceedings of Conferences, Congresses, Review Annuals *00520
 BC Hominidae 86215
 IT Major Concepts
 Methods and Techniques
 IT Parts, Structures, & Systems of Organisms
 granulocyte
 IT Methods & Equipment
 multiparametric **biochip: analytical method**
 IT Miscellaneous Descriptors
 cell-based screening; Meeting Abstract; Meeting Poster
 ORGN Super Taxa
 Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia
 ORGN Organism Name
 human (Hominidae); LS 174 T cell line (Hominidae)
 ORGN Organism Superterms
 Animals; Chordates; Humans; Mammals; Primates; Vertebrates

L80 ANSWER 15 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
 AN 1999:293920 BIOSIS
 DN **PREV199900293920**
 TI Cellular behaviour as a signal source for multiparametric **biochips**

AU Ehret, Ralf (1); Baumann, Werner (1); Brischwein, Martin (1); Lehmann, Mirko (1); Kraus, Michael (1); Henning, Tobias (1); Freund, Ingo (1); Schwinde, Anne (1); Bitzenhofer, Matthias (1); Wolf, Bernhard (1)
 CS (1) Fachbereich Biologie, Biophysik, Universitaet Rostock, Wismarsche Strasse 8, 18051, Rostock Germany
 SO European Journal of Cell Biology, (1999) Vol. 78, No. SUPPL. 49, pp. 10. Meeting Info.: 23rd Annual Meeting of the German Society for Cell Biology Rostock, Germany March 14-18, 1999 German Society for Cell Biology . ISSN: 0171-9335.
 DT Conference
 LA English
 CC **Cytology and Cytochemistry - General *02502**
 Biophysics - General Biophysical Techniques *10504
 General Biology - Symposia, Transactions and Proceedings of Conferences, Congresses, Review Annuals *00520
 BC Organisms - Unspecified 00500
 IT Major Concepts
 Cell Biology; **Methods** and Techniques
 IT Parts, Structures, & Systems of Organisms
 cell: **analysis**
 IT Methods & Equipment
 multiparametric **biochip: analytical method**
 ; Cell-Monitoring System: **analytical method**
 IT Miscellaneous Descriptors
 Meeting Abstract
 ORGN Super Taxa
 Organisms
 ORGN Organism Name
 eukaryote (Organisms)

L80 ANSWER 16 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

AN 1999:274410 BIOSIS
 DN **PREV199900274410**
 TI Trends in molecular diagnostics.
 AU Foedinger, Manuela (1); Sunder-Plassmann, Gere; Wagner, Oswald F.
 CS (1) Klinisches Institut fuer Medizinische und Chemische Labordiagnostik,
 Universitaet Wien, Waehringer Guertel 18-20, A-1090, Wien Austria
 SO Wiener Klinische Wochenschrift, (April 23, 1999) Vol. 111, No. 8, pp.
 315-319.
 ISSN: 0043-5325.
 DT Article
 LA German
 SL English; German
 AB The number of characterized monogenic and polygenic diseases is rising
 each year. In consequence, molecular diagnostics is faced with an ever
 increasing number of patient samples and with more and more heterogeneous
 genetic defects. The fusion of microelectronics and molecular biology has
 created a new technology (microelectronic miniaturization), which provides
 a rapid, efficient, and cost-effective tool in molecular diagnostics at a
high-sample throughput. The **biochip** has
 recently been selected as one of the ten scientific highlights in the year
 1998. The application of microelectronics ranges from the polymerase chain
 reaction (PCR), nucleotide sequence **analysis** via DNA-
chips or capillary electrophoresis-**chips** to gene
 expression **analysis**. These **microchips** are suited for
 integration into fully automated systems, thus providing the basis for
 automation of molecular diagnostics. The present article summarizes
 important trends in molecular diagnostics and provides a glimpse on future
 technologies.
 CC Genetics and Cytogenetics - General *03502
 Biochemical Methods - General *10050
 Biochemical Methods - Nucleic Acids, Purines and Pyrimidines *10052
 Biochemical Studies - General *10060
 Biochemical Studies - Nucleic Acids, Purines and Pyrimidines *10062
 BC Hominidae 86215
 IT Major Concepts
 Molecular Genetics (Biochemistry and Molecular Biophysics)
 IT Methods & Equipment
 capillary electrophoresis **microchip**; microelectronic
 miniaturization: molecular diagnostic **method**; nucleotide
 sequence **analysis**: molecular diagnostic **method**;
 polymerase chain reaction: genetic **method**; DNA
microchip
 IT Miscellaneous Descriptors
 molecular diagnostics: automation, clinical application
 ORGN Super Taxa
 Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia
 ORGN Organism Name
 human (Hominidae): patient
 ORGN Organism Superterms
 Animals; Chordates; Humans; Mammals; Primates; Vertebrates

L80 ANSWER 17 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
 AN 1998:189683 BIOSIS
 DN **PREV199800189683**
 TI The **Biochip**. A new membrane bioreactor system for the
 cultivation of animal cells in defined tissue-like cell densities.
 AU Seewoster, Thomas (1); Wilmsmann, Sandra; Werner, Andreas; Lehmann, Jurgen
 CS (1) BASF Bioresearch Corp., PD Dep., 100 Research Drive, Worcester, MA
 01605-4314 USA
 SO Prokop, A. [Editor]; Hunkeler, D. [Editor]; Cherrington, A. D. [Editor].
 Annals of the New York Academy of Sciences, (Dec. 31, 1997) Vol. 831, pp.
 244-248. Annals of the New York Academy of Sciences; Bioartificial organs:
 Science, medicine, and technology.
 Publisher: New York Academy of Sciences 2 East 63rd Street, New York, New
 York 10021, USA.
 Meeting Info.: Conference Nashville, Tennessee, USA July 21-26, 1996 New

York Academy of Science
. ISSN: 0077-8923. ISBN: 1-57331-098-0.

DT Book; Conference
LA English
CC **Cytology and Cytochemistry - General *02502**
Biophysics - General Biophysical Studies *10502
Biophysics - Membrane Phenomena *10508
Biophysics - Bioengineering *10511
General Biology - Symposia, Transactions and Proceedings of Conferences,
Congresses, Review Annuals *00520
BC Cricetidae 86310
IT Major Concepts
Cell Biology; Equipment, Apparatus, Devices and Instrumentation;
Membranes (Cell Biology)
IT Miscellaneous Descriptors
biochip: membrane bioreactor system; cell cultivation:
tissue-like density; Book Chapter; Meeting Paper
ORGN Super Taxa
Cricetidae: Rodentia, Mammalia, Vertebrata, Chordata, Animalia
ORGN Organism Name
CHO (Cricetidae): Chinese hamster ovary cells
ORGN Organism Superterms
Animals; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates;
Rodents; Vertebrates

L80 ANSWER 18 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1995:426078 BIOSIS
DN **PREV199598440378**
TI Towards a neural cell-based **biochip** sensor.
AU Makohliso, S. A. (1); Giovongrandi, L.; Buhlmann, H. J.; Dutoit, M.;
Aebischer, P. (1)
CS (1) Univ. Lausanne Med. Sch., Lausanne Switzerland
SO Society for Neuroscience Abstracts, (1995) Vol. 21, No. 1-3, pp. 63.
Meeting Info.: 25th Annual Meeting of the Society for Neuroscience San
Diego, California, USA November 11-16, 1995
ISSN: 0190-5295.
DT Conference
LA English
CC General Biology - Symposia, Transactions and Proceedings of Conferences,
Congresses, Review Annuals 00520
Cytology and Cytochemistry - Animal *02506
Biophysics - General Biophysical Techniques *10504
Biophysics - Membrane Phenomena 10508
Nervous System - Physiology and Biochemistry *20504
BC Muridae *86375
IT Major Concepts
Cell Biology; **Methods** and Techniques; Nervous System (Neural
Coordination)
IT Miscellaneous Descriptors
MEETING ABSTRACT; MEETING POSTER; MEMBRANE VARIATION; NEUROTRANSMISSION
ORGN Super Taxa
Muridae: Rodentia, Mammalia, Vertebrata, Chordata, Animalia
ORGN Organism Name
rat (Muridae)
ORGN Organism Superterms
animals; chordates; mammals; nonhuman mammals; nonhuman vertebrates;
rodents; vertebrates

L80 ANSWER 19 OF 19 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1993:440187 BIOSIS
DN **PREV199345075812**
TI How to make a **biochip**.
AU Karasev, V. A. (1); Stefanov, V. E.; Luchinin, V. V. (1)
CS (1) St. Petersburg Electrotech. Inst., St. Petersburg 197376 Russia
SO Biotekhnologiya, (1993) Vol. 0, No. 2, pp. 3-15.
ISSN: 0234-2758.

DT Article
 LA Russian
 SL Russian; English
 CC Methods, Materials and Apparatus, General - Laboratory Apparatus 01006
 Mathematical Biology and Statistical Methods 04500
 Biochemical Methods - General *10050
 Biochemical Methods - Proteins, Peptides and Amino Acids *10054
 Biochemical Studies - General *10060
 Biochemical Studies - Proteins, Peptides and Amino Acids *10064
 Biophysics - General Biophysical Studies 10502
 Biophysics - General Biophysical Techniques 10504
 Biophysics - Molecular Properties and Macromolecules *10506
 Biophysics - Bioengineering *10511
 Enzymes - Methods 10804
 Enzymes - Chemical and Physical *10806
 IT Major Concepts
 Biochemistry and Molecular Biophysics; Enzymology (Biochemistry and
 Molecular Biophysics); General Life Studies; **Methods** and
 Techniques
 IT Industry
 biotechnology industry
 IT Miscellaneous Descriptors
 ENZYME ACTIVITIES; PROTEINS

=> fil medline

FILE 'MEDLINE' ENTERED AT 11:56:41 ON 06 FEB 2002

FILE LAST UPDATED: 5 FEB 2002 (20020205/UP). FILE COVERS 1958 TO DATE.

On April 22, 2001, MEDLINE was reloaded. See HELP RLOAD for details.

MEDLINE now contains IN-PROCESS records. See HELP CONTENT for details.

MEDLINE is now updated 4 times per week. A new current-awareness alert frequency (EVERYUPDATE) is available. See HELP UPDATE for more information.

MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the MeSH 2001 vocabulary. Enter HELP THESAURUS for details.

The OLDMEDLINE file segment now contains data from 1958 through 1965. Enter HELP CONTENT for details.

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=> d all tot

L120 ANSWER 1 OF 12 MEDLINE
 AN 2001128581 MEDLINE
 DN **21010455** PubMed ID: **11128941**
 TI **Microchip** devices for high-efficiency separations.
 AU Culbertson C T; Jacobson S C; Ramsey J M
 CS Oak Ridge National Laboratory, Tennessee 37831-6142, USA.
 SO ANALYTICAL CHEMISTRY, (2000 Dec 1) 72 (23) 5814-9.
 Journal code: 4NR; 0370536. ISSN: 0003-2700.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 EM 200103
 ED Entered STN: 20010404
 Last Updated on STN: 20010404
 Entered Medline: 20010301

AB We have fabricated a 25-cm-long spiral-shaped separation **channel** on a glass **microchip** with a footprint of only 5 cm x 5 cm. Electrophoretic separation efficiencies for dichlorofluorescein (DCF) on this **chip** exceeded 1,000,000 theoretical plates and were achieved in under 46 s at a detection point 22.2 cm from the injection cross. The number of theoretical plates increased linearly with the applied voltage, and at a separation field strength of 1,170 V/cm, the rate of plate generation was approximately 21,000 plates/s. The large radii of curvature of the turns minimized the analyte dispersion introduced by the **channel** geometry as evidenced by the fact that the effective diffusion coefficient of DCF was within a few percent of that measured on a **microchip** with a straight separation **channel** over a wide range of electric field strengths. A micellar electrokinetic chromatography separation of 19 tetramethylrhodamine-labeled amino acids was accomplished in 165 s with an average plate number of 280,000. The minimum resolution between adjacent peaks for this separation was 1.2.

L120 ANSWER 2 OF 12 MEDLINE

AN 2000266372 MEDLINE

DN 20266372 PubMed ID: 10792056

TI Automated parallel DNA sequencing on multiple **channel microchips**.

AU Liu S; Ren H; Gao Q; Roach D J; Loder R T Jr; Armstrong T M; Mao Q; Blaga I; Barker D L; Jovanovich S B

CS Molecular Dynamics/Amersham Pharmacia Biotech, Sunnyvale, CA 94086, USA.. sharong.liu@am.apbiotech.com

NC R01HG01775-03 (NHGRI)

R43HG02980-01 (NHGRI)

SO PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (2000 May 9) 97 (10) 5369-74.

Journal code: PV3; 7505876. ISSN: 0027-8424.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 200006

ED Entered STN: 20000622

Last Updated on STN: 20000622

Entered Medline: 20000613

AB We report automated DNA sequencing in 16-**channel**

microchips. A **microchip** prefilled with sieving matrix is aligned on a heating plate affixed to a movable platform. Samples are loaded into sample reservoirs by using an eight-tip pipetting device, and the **chip** is docked with an **array** of electrodes in the focal plane of a four-color scanning detection system. Under computer control, high voltage is applied to the appropriate reservoirs in a programmed sequence that injects and separates the DNA samples. An integrated four-color confocal fluorescent detector automatically scans all 16 **channels**. The system routinely yields more than 450 bases in 15 min in all 16 **channels**. In the best case using an automated base-calling program, 543 bases have been called at an accuracy of >99%. Separations, including automated **chip** loading and sample injection, normally are completed in less than 18 min. The advantages of DNA sequencing on capillary electrophoresis **chips** include uniform signal intensity and tolerance of high DNA template concentration. To understand the fundamentals of these unique features we developed a theoretical treatment of cross-**channel chip** injection that we call the differential concentration effect. We present experimental evidence consistent with the predictions of the theory.

CT Check Tags: Support, U.S. Gov't, Non-P.H.S.; Support, U.S. Gov't, P.H.S.

Automation: IS, instrumentation

Automation: MT, methods

Base Sequence

Equipment Design

Molecular Sequence Data

*Oligonucleotide Array Sequence Analysis: MT, methods
Reproducibility of Results
Sequence Analysis, DNA: IS, instrumentation
*Sequence Analysis, DNA: MT, methods
Templates

L120 ANSWER 3 OF 12 MEDLINE
AN 1999274037 MEDLINE
DN 99274037 PubMed ID: 10344240
TI **Microchannel** networks for electrophoretic separations.
AU Rossier J S; Schwarz A; Reymond F; Ferrigno R; Bianchi F; Girault H H
CS Laboratoire d'Electrochimie, Ecole Polytechnique Federale de Lausanne,
Switzerland.
SO ELECTROPHORESIS, (1999 Apr-May) 20 (4-5) 727-31.
Journal code: ELE; 8204476. ISSN: 0173-0835.
CY GERMANY: Germany, Federal Republic of
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199907
ED Entered STN: 19990806
Last Updated on STN: 19990806
Entered Medline: 19990729
AB UV excimer laser photoablation was used to micro-machine polymer
substrates not only to drill **microchannel** structures but also to
change the surface physical properties of the substrates. We first
describe how UV laser photoablation can be used for the patterning of
biomolecules on a polymer and discuss parameters such as surface coverage
of active antibodies and equilibration time. Secondly, we show how to
design a single-use capillary electrophoresis system comprising an on-
chip injector, column and electrochemical detector. The potential
of this disposable plastic device is discussed and briefly compared to
classical systems. Finally, preliminary results on protein separation by
isoelectric focusing on a disposable **microchip** are presented.
CT Check Tags: Support, Non-U.S. Gov't
Adsorption
*Electrophoresis, Capillary: MT, methods
*Isoelectric Focusing: MT, methods
Lasers
Polyethylene Terephthalates
Polymers
*Proteins: IP, isolation & purification
Ultraviolet Rays
CN 0 (Polyethylene Terephthalates); 0 (Polymers); 0 (Proteins)

L120 ANSWER 4 OF 12 MEDLINE
AN 1999143969 MEDLINE
DN 99143969 PubMed ID: 9989377
TI Optimization of high-speed DNA sequencing on microfabricated capillary
electrophoresis **channels**.
AU Liu S; Shi Y; Ja W W; Mathies R A
CS Department of Chemistry, University of California, Berkeley 94720, USA.
NC HG01399 (NHGRI)
SO ANALYTICAL CHEMISTRY, (1999 Feb 1) 71 (3) 566-73.
Journal code: 4NR; 0370536. ISSN: 0003-2700.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199903
ED Entered STN: 19990324
Last Updated on STN: 20000303
Entered Medline: 19990305
AB DNA sequencing separations have been performed in microfabricated
electrophoresis **channels** with the goal of determining whether
high-quality sequencing is feasible with these microdevices. The

separation matrix, separation temperature, **channel** length and depth, injector size, and injection parameters were optimized. DNA fragment sizing separations demonstrated that 50-micron-deep **channels** provide the best sensitivity for our detection configuration. One-color sequencing separations of single-stranded M13mp18 DNA on 3% linear polyacrylamide (LPA) were used to optimize the twin-T injector size, injection conditions, and temperature. The best one-color separations were observed with a 250-micron twin-T injector, an injection time of 60 s, and a temperature of 35 degrees C. The first 500 bases appeared in 9.2 min with a resolution of > 0.5, and the separation extended to 700 bases. The best four-color sequencing separations were performed using 4% LPA, a temperature of 40 degrees C, and a 100-micron twin-T injector. These four-color runs were complete in only 20 min, could be automatically base-called using BaseFinder to over 600 bp after the primer, and were 99.4% accurate to 500 bp. These results significantly advance the quality of **microchip**-based electrophoretic sequencing and indicate the feasibility of performing high-speed genomic sequencing with microfabricated electrophoretic devices.

CT Check Tags: Support, U.S. Gov't, Non-P.H.S.; Support, U.S. Gov't, P.H.S.

Base Sequence

*DNA: AN, analysis

DNA: IP, isolation & purification

Electrophoresis, Capillary: IS, instrumentation

***Electrophoresis, Capillary: MT, methods**

Molecular Sequence Data

***Sequence Analysis, DNA: MT, methods**

RN 9007-49-2 (DNA)

L120 ANSWER 5 OF 12 MEDLINE

AN 1999139865 MEDLINE

DN **99139865** PubMed ID: **9988626**

TI A controlled-release **microchip**.

AU Santini J T Jr; Cima M J; Langer R

CS Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, USA.. rlander@mid.edu

SO NATURE, (1999 Jan 28) 397 (6717) 335-8.

Journal code: NSC; 0410462. ISSN: 0028-0836.

CY ENGLAND: United Kingdom

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199902

ED Entered STN: 19990223

Last Updated on STN: 19990223

Entered Medline: 19990211

AB Much previous work in methods of achieving complex drug-release patterns has focused on pulsatile release from polymeric materials in response to specific stimuli, such as electric or magnetic fields, exposure to ultrasound, light or enzymes, and changes in pH or temperature. An alternative method for achieving pulsatile release involves using microfabrication technology to develop active devices that incorporate micrometre-scale pumps, valves and flow **channels** to deliver liquid solutions. Here we report a solid-state silicon **microchip** that can provide controlled release of single or multiple chemical substances on demand. The release mechanism is based on the electrochemical dissolution of thin anode membranes covering microreservoirs filled with chemicals in solid, liquid or gel form. We have conducted proof-of-principle release studies with a prototype **microchip** using gold and saline solution as a model electrode material and release medium; and we have demonstrated controlled, pulsatile release of chemical substances with this device.

CT Biocompatible Materials

Delayed-Action Preparations

*Drug Delivery Systems: IS, instrumentation

Drug Implants

Electrochemistry

Fluorescein
Gold
Miniaturization
Silicon
Sodium Chloride
RN 2321-07-5 (Fluorescein); 7440-21-3 (Silicon); 7440-57-5 (Gold); 7647-14-5 (Sodium Chloride)
CN 0 (Biocompatible Materials); 0 (Delayed-Action Preparations); 0 (Drug Implants)

L120 ANSWER 6 OF 12 MEDLINE
AN 1998279688 MEDLINE
DN 98279688 PubMed ID: 9616716
TI The **biochip**. A new membrane bioreactor system for the cultivation of animal cells in defined tissue-like cell densities.
AU Seewoster T; Wilmsmann S; Werner A; Lehmann J
CS Institute of Cell Culture Technology, Faculty of Technical Sciences, University of Bielefeld, Germany.. seewoet@BBC01.worcester.basf-corp.com
SO ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, (1997 Dec 31) 831 244-8.
Journal code: 5NM; 7506858. ISSN: 0077-8923.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199806
ED Entered STN: 19980708
Last Updated on STN: 19980708
Entered Medline: 19980624
AB Based on the **laminar** structure of the human liver tissue, a high cell density membrane bioreactor was developed that emulates a cell layer thickness of 40 microns. The "**biochip**" consists of a platinum-coated metal cell grid covered with two microfiltration membranes to form separate cell chambers of defined volume. Starting with a continuous chemostat process, the viability of a model suspension cell culture could be stabilized at 98%. In a second step these cells were transferred into the **biochip** system and were cultivated successfully for several days under tissue-like cell densities in a modified membrane holder under cross-flow conditions.
CT Check Tags: Animal; Human; Support, Non-U.S. Gov't
*Bioreactors
CHO Cells
Cell Count
Cells, Cultured
*Cytological Techniques
Hamsters
Liver: CY, cytology
*Membranes, Artificial
Ultrafiltration

L120 ANSWER 7 OF 12 MEDLINE
AN 1998189296 MEDLINE
DN 98189296 PubMed ID: 9514776
TI Integrated cell isolation and polymerase chain reaction analysis using silicon microfilter chambers.
AU Wilding P; Kricka L J; Cheng J; Hvichia G; Shoffner M A; Fortina P
CS Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia 19104, USA.
SO ANALYTICAL BIOCHEMISTRY, (1998 Mar 15) 257 (2) 95-100.
Journal code: 4NK; 0370535. ISSN: 0003-2697.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199805
ED Entered STN: 19980609

Last Updated on STN: 19980609

Entered Medline: 19980527

AB White blood cells are isolated from whole blood in silicon-glass 4.5-microliter **microchips** containing a series of 3.5-micron feature-sized 'weir-type' filters, formed by an etched silicon dam spanning the flow chamber. Genomic DNA targets, e.g., dystrophin gene, can be directly amplified using the polymerase chain reaction (PCR) from the white cells isolated on the filters. This dual function **microchip** provides a means to simplify nucleic acid analyses by integrating in a single device two key steps in the analytical procedure, namely, cell isolation and PCR.

CT Check Tags: Human; Support, Non-U.S. Gov't
Cell Separation: MT, methods
 DNA: AN, analysis
Dystrophin: BL, blood
Dystrophin: GE, genetics
Erythrocytes: CY, cytology
Erythrocytes: ME, metabolism
 Glass
Hemoglobins: ME, metabolism
Leukocytes: CH, chemistry
***Leukocytes: CY, cytology**
 Micropore Filters
***Polymerase Chain Reaction: IS, instrumentation**
Polymerase Chain Reaction: MT, methods
 Silicon

RN 7440-21-3 (Silicon); 9007-49-2 (DNA)
 CN 0 (Dystrophin); 0 (Glass); 0 (Hemoglobins)

L120 ANSWER 8 OF 12 MEDLINE

AN 1998073055 MEDLINE

DN **98073055** PubMed ID: **9408757**

TI Matrix-based comparative genomic hybridization: **biochips** to screen for genomic imbalances.

AU Solinas-Toldo S; Lampel S; Stilgenbauer S; Nickolenko J; Benner A; Dohner H; Cremer T; Lichter P

CS Organisation komplexer Genome, Deutsches Krebsforschungszentrum, Heidelberg, Germany.

SO GENES, CHROMOSOMES AND CANCER, (1997 Dec) 20 (4) 399-407.
 Journal code: AYV; 9007329. ISSN: 1045-2257.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199801

ED Entered STN: 19980129

Last Updated on STN: 19980129

Entered Medline: 19980113

AB Comparative genomic hybridization (CGH) to metaphase chromosomes has been widely used for the genome-wide screening of genomic imbalances in tumor cells. Substitution of the chromosome targets by a matrix consisting of an ordered set of defined nucleic acid target sequences would greatly enhance the resolution and simplify the analysis procedure, both of which are prerequisites for a broad application of CGH as a diagnostic tool. However, hybridization of whole genomic human DNA to immobilized single-copy DNA fragments with complexities below the megabase pair level has been hampered by the low probability of specific binding because of the high probe complexity. We developed a protocol that allows CGH to **chips** consisting of glass slides with immobilized target DNAs **arrayed** in small spots. High-copy-number amplifications contained in tumor cells were rapidly scored by use of target DNAs as small as a cosmid. Low-copy-number gains and losses were identified reliably by their ratios by use of chromosome-specific DNA libraries or genomic fragments as small as 75 kb cloned in PI or PAC vectors as targets, thus greatly improving the resolution achievable by chromosomal CGH. The ratios obtained for the same chromosomal imbalance by matrix CGH and by

chromosomal CGH corresponded very well. The new matrix CGH protocol provides a basis for the development of automated diagnostic procedures with **biochips** designed to meet clinical needs.

CT Check Tags: Human; Support, Non-U.S. Gov't

***Chromosome Aberrations: GE, genetics**

DNA Probes: DU, diagnostic use

DNA, Neoplasm: AN, analysis

Fluorescent Dyes: DU, diagnostic use

Gene Amplification

*Gene Dosage

Gene Library

Microscopy, Confocal

*Neoplasms: GE, genetics

***Nucleic Acid Hybridization: MT, methods**

Tumor Cells, Cultured

CN 0 (DNA Probes); 0 (DNA, Neoplasm); 0 (Fluorescent Dyes)

L120 ANSWER 9 OF 12 MEDLINE

AN 97263259 MEDLINE

DN 97263259 PubMed ID: 9109354

TI Transport, manipulation, and reaction of biological cells on-**chip** using electrokinetic effects.

AU Li P C; Harrison D J

CS Department of Chemistry, University of Alberta, Edmonton, Canada.

SO ANALYTICAL CHEMISTRY, (1997 Apr 15) 69 (8) 1564-8.

Journal code: 4NR; 0370536. ISSN: 0003-2700.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199705

ED Entered STN: 19970523

Last Updated on STN: 19980206

Entered Medline: 19970515

AB A microfluidic system was fabricated on a glass **chip** to study mobilization of biological cells on-**chip**. Electroosmotic and/or electrophoretic pumping were used to drive the cell transport within a network of capillary **channels**. Whole cells such as *Saccharomyces cerevisiae*, canine erythrocyte, and *Escherichia coli* were employed in this work. Photographs are presented to illustrate how cells are selected and transported from one location to another within the capillary network, with velocities up to about 0.5 mm/s in capillaries with a 15- x 55-microns cross section. The mixing of canine erythrocytes with the lysing agent sodium dodecyl sulfate, at an intersection within the **chip**, was performed to demonstrate that cell selection and subsequent reaction can be accomplished within the **microchip**.

CT Check Tags: Animal; In Vitro; Support, Non-U.S. Gov't

Biological Transport

*Cell Physiology

Cells: ME, metabolism

*Cells: PH, physiology

Dogs

Erythrocytes: ME, metabolism

Erythrocytes: PH, physiology

Escherichia coli: ME, metabolism

Escherichia coli: PH, physiology

Micromanipulation

Saccharomyces cerevisiae: ME, metabolism

Saccharomyces cerevisiae: PH, physiology

L120 ANSWER 10 OF 12 MEDLINE

AN 96086385 MEDLINE

DN 96086385 PubMed ID: 7588514

TI **Microchip** electrophoresis with sample stacking.

AU Jacobson S C; Ramsey J M

CS Chemical and Analytical Sciences Division, Oak Ridge National Laboratory,

TN 37831-6142, USA.

SO ELECTROPHORESIS, (1995 Apr) 16 (4) 481-6.
Journal code: ELE; 8204476. ISSN: 0173-0835.

CY GERMANY: Germany, Federal Republic of

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199512

ED Entered STN: 19960124
Last Updated on STN: 19960124
Entered Medline: 19951213

AB A fused quartz **microchip** with a serpentine column geometry is fabricated to perform rapid **microchip** electrophoresis of dansylated amino acids. A 67 mm separation column is constructed in a 7 x 10 mm area on a quartz substrate using standard photolithographic, etching and deposition techniques. Buffer and sample flows within the **channel** manifold are precisely controlled through potentials applied to the reservoirs. To enhance the detection limits, a stacking injection technique is used to concentrate the sample at the inlet of the separation column. The stacked injections exhibit high reproducibility (2.1% relative standard deviation in peak area). Using a separation length of 67 mm and a separation field strength of 1100 V/cm, separations are performed in ≤ 15 s generating approximately 40,000 theoretical plates.

CT Check Tags: Support, Non-U.S. Gov't; Support, U.S. Gov't, Non-P.H.S.;
Support, U.S. Gov't, P.H.S.
*Amino Acids: AN, analysis
*Dansyl Compounds: AN, analysis
Electrophoresis: IS, instrumentation
*Electrophoresis: MT, methods
Miniaturization

CN 0 (Amino Acids); 0 (Dansyl Compounds)

L120 ANSWER 11 OF 12 MEDLINE

AN 89220955 MEDLINE

DN 89220955 PubMed ID: 3508280

TI The design of a **biochip**: a self-assembling molecular-scale memory device.

AU Robinson B H; Seeman N C

CS Department of Chemistry, University of Washington, Seattle 98195.

NC ES-00117 (NIEHS)
GM-29554 (NIGMS)

SO PROTEIN ENGINEERING, (1987 Aug-Sep) 1 (4) 295-300.
Journal code: PR1; 8801484. ISSN: 0269-2139.

CY ENGLAND: United Kingdom

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 198906

ED Entered STN: 19900306
Last Updated on STN: 19970203
Entered Medline: 19890608

AB A design for a **biochip** memory device based on known materials and existing principles is presented. The fabrication of this memory system relies on the self-assembly of the nucleic acid junction system, which acts as the scaffolding for a molecular wire consisting of polyacetylene-like units. A molecular switch to control current is described which is based on the formation of a charge-transfer complex. A molecular-scale bit is presented which is based on oxidation-reduction potentials of metal atoms or clusters. The readable 'bit' which can be made of these components has a volume of 3×10^7 A3, and should operate at electronic speeds over short distances.

CT Check Tags: Support, Non-U.S. Gov't; Support, U.S. Gov't, Non-P.H.S.;
Support, U.S. Gov't, P.H.S.
*Computers
*Electronics: IS, instrumentation

Macromolecular Systems*Nucleic Acids**

CN 0 (Macromolecular Systems); 0 (Nucleic Acids)

L120 ANSWER 12 OF 12 MEDLINE

AN 87049957 MEDLINE

DN 87049957 PubMed ID: 3779047

TI The bacteriorhodopsin model membrane system as a prototype molecular computing element.

AU Hong F T

NC EY-03334 (NEI)

EY-04068 (NEI)

GM-25144 (NIGMS)

+

SO BIOSYSTEMS, (1986) 19 (3) 223-36.

Journal code: A6E; 0430773. ISSN: 0303-2647.

CY Netherlands

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 198701

ED Entered STN: 19900302

Last Updated on STN: 19970203

Entered Medline: 19870121

AB The quest for more sophisticated integrated circuits to overcome the limitation of currently available silicon integrated circuits has led to the proposal of using biological molecules as computational elements by computer scientists and engineers. While the theoretical aspect of this possibility has been pursued by computer scientists, the research and development of experimental prototypes have not been pursued with an equal intensity. In this survey, we make an attempt to examine model membrane systems that incorporate the protein pigment bacteriorhodopsin which is found in *Halobacterium halobium*. This system was chosen for several reasons. The pigment/membrane system is sufficiently simple and stable for rigorous quantitative study, yet at the same time sufficiently complex in molecular structure to permit alteration of this structure in an attempt to manipulate the photosignal. Several methods of forming the pigment/membrane assembly are described and the potential application to **biochip** design is discussed. Experimental data using these membranes and measured by a tunable voltage clamp method are presented along with a theoretical analysis based on the Gouy-Chapman diffuse double layer theory to illustrate the usefulness of this approach. It is shown that detailed layouts of the pigment/membrane assembly as well as external loading conditions can modify the time course of the photosignal in a predictable manner. Some problems that may arise in the actual implementation and manufacturing, as well as the use of existing technology in protein chemistry, immunology, and recombinant DNA technology are discussed.

CT Check Tags: Support, Non-U.S. Gov't; Support, U.S. Gov't, P.H.S.

Bacteriorhodopsin**Computers**

Electronics

Light

Membrane Potentials

Membranes

Models, Biological

Structure-Activity Relationship

Time Factors

RN 53026-44-1 (Bacteriorhodopsin)

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FILE COVERS 1907 - 1 Feb 2002 VOL 136 ISS 6
FILE LAST UPDATED: 30 Jan 2002 (20020130/ED)

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=> d all tot

L130 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:654880 HCAPLUS

DN 135:207841

TI Method for detecting **protein** using **protein chip**

IN Makino, Yoshihiko; Ogawa, Masashi; Takagi, Makoto; Takenaka, Shigeo

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G01N027-327

ICS C07K017-00; G01N027-416; G01N033-543; G01N033-566

CC 9-1 (Biochemical Methods)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	JP 2001242116	A2	20010907	JP 2000-57602	20000302
AB	A method is provided for detecting a protein using a protein chip in order to perform as a part of protein research an anal. of the interaction of the protein with other proteins utilizing an electrochem. technique. In this protein chip , a protein is immobilized on a baseplate surface, and the sample proteins are labeled with an electrochem. active substance. Then, the protein in the sample capable of forming a specific bond with the protein on the baseplate surface is electrochem. detected.				
ST	protein chip interaction detection electrochem analysis				
IT	Biotechnology (biochips ; method for detecting protein using protein chip)				
IT	Coating process Electrochemical analysis				

Electrodes
Immobilization, biochemical
Ionic strength
Molecular association
Sulfhydryl group
Temperature
(method for detecting **protein** using **protein chip**)

IT **Proteins**, general, analysis
RL: ANT (Analyte); ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process); USES (Uses)
(method for detecting **protein** using **protein chip**)
IT 7440-57-5, Gold, uses
RL: DEV (Device component use); USES (Uses)
(method for detecting **protein** using **protein chip**)

L130 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:318936 HCAPLUS

DN **134:363475**

TI Adsorption of avidin on microfabricated surfaces for protein **biochip** applications

AU Bashir, R.; Gomez, R.; Sarikaya, A.; Ladisch, M. R.; Sturgis, J.; Robinson, J. P.

CS School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, 47907, USA

SO Biotechnol. Bioeng. (2001), 73(4), 324-328
CODEN: BIBIAU; ISSN: 0006-3592

PB John Wiley & Sons, Inc.

DT Journal

LA English

CC **9-1** (Biochemical Methods)

AB The adsorption of the **protein** avidin from hen egg white on patterns of silicon dioxide and platinum surfaces on a **microchip** and the use of fluorescent microscopy to detect binding of biotin are described. A silicon dioxide **microchip** was formed using plasma-enhanced chem. vapor deposition while platinum was deposited using radiofrequency sputtering. After cleaning using a plasma arc, the **chips** were placed into solns. contg. avidin or bovine serum albumin. The avidin was adsorbed onto the **microchips** from phosphate-buffered saline (PBS) or from PBS to which ammonium sulfate had been added. Avidin was also adsorbed onto bovine serum albumin (BSA)-**coated** surfaces of oxide and platinum. Fluorescence microscopy was used to confirm adsorption of labeled **protein**, or the binding of fluorescently labeled biotin onto previously adsorbed, unlabeled avidin. When labeled biotin in PBS was presented to avidin adsorbed onto a BSA-**coated microchip**, the fluorescence signal was significantly higher than for avidin adsorbed onto the **biochip** alone. The results show that a simple, low-cost adsorption process can deposit active **protein** onto a **chip** in an approach that has potential application in the development of **protein biochips** for the detection of biol. species.

ST avidin adsorption protein **biochip**

IT Sputtering
(avidin adsorption on microfabricated surfaces for protein **biochip** applications)

IT **Proteins**, general, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(avidin adsorption on microfabricated surfaces for protein **biochip** applications)

IT Avidins
RL: PRP (Properties)
(avidin adsorption on microfabricated surfaces for protein

IT **biochip** applications)
 IT Biotechnology
 (biochips; avidin adsorption on microfabricated surfaces for protein **biochip** applications)
 IT Vapor deposition process
 (plasma; avidin adsorption on microfabricated surfaces for protein **biochip** applications)
 IT Adsorption
 (protein; avidin adsorption on microfabricated surfaces for protein **biochip** applications)
 IT 7440-06-4, Platinum, uses 7631-86-9, Silicon dioxide, uses
 RL: DEV (Device component use); USES (Uses)
 (avidin adsorption on microfabricated surfaces for protein **biochip** applications)
 RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
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 (2) Bollag, D; Protein Methods 2nd ed 1994, P394
 (3) Borkholder, D; Proceedings of the annual international conference of the IEEE Engineering in Medicine and Biology 1996, P106
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 (5) Fodor, S; Science 1991, V251, P767 HCAPLUS
 (6) Fukuzaki, S; J Ferment Bioeng 1996, V81, P163 HCAPLUS
 (7) Harrison, F; Sens Actuat B 1996, V33, P105
 (8) Heller, M; IEEE Eng Med Biol 1996, V15, P100
 (9) Lahiri, J; A Strategy for the generation of surfaces presenting ligands for studies of binding based on an active ester as a common reactive intermediate: A surface plasmon resonance study 1999, V71, P777 HCAPLUS
 (10) Mooney, J; Proc Natl Acad Sci 1996, V93, P12287 HCAPLUS
 (11) Nicolau, D; Langmuir 1998, V14, P1927 HCAPLUS
 (12) Roscoe, S; J Coll Interf Sci 1992, V152, P429 HCAPLUS
 (13) Whaley, S; Nature 2000, V405, P665 HCAPLUS
 (14) wilchek, M; Avidin-biotin technology 1990, P85
 (15) Williams, R; Biosens Bioelectron 1994, V9, P159 HCAPLUS
 (16) Woolley, A; Anal Chem 1995, V67, P3676 HCAPLUS

L130 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:152727 HCAPLUS

DN 134:190331

TI Multipurpose diagnostic systems using **protein chips**

IN Kim, Sun-young; Yoon, Keejung; Park, Eun-jin

PA Diachip Limited, S. Korea

SO PCT Int. Appl., 59 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C07K017-00

ICS G01N033-53; G01N033-533; G01N033-533

CC 9-1 (Biochemical Methods)

Section cross-reference(s): 1, 7, 14, 15

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001014425	A1	20010301	WO 2000-KR928	20000819
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

PRAI KR 1999-34427 A 19990819

AB The present invention provides **protein chips** on which high d. of **protein probe arrays** are fixed, a method

for manufg. the **protein chips**, atomized diagnostic systems comprising the **protein chips** and the use thereof. The highly integrated structure of the **protein chip** makes a biochem. or an immunol. assay faster, suitable for automation, precise and easy to handle. The usage of the **protein chip** encompasses clin. diagnosis, researches for the kinetics of enzymic reactions and screening antagonists or ligands which bind to the interested receptors. In particular, the **protein chip** enables multipurpose diagnosis of various diseases for a no. of patients even by a test. Recombinant antigens from hepatitis C virus or from HIV-1 were immobilized on glass slides **coated** with aminoalkylsilane to make **protein chips** which were used to detect antibodies in blood serum samples. FITC-conjugated anti-human IgG and high-speed fluorescence scanning were used in the detection.

ST multipurpose diagnostic system **protein chip**; antibody hepatitis C virus immunodiagnosis **chip**; HIV1 antibody blood antigen **chip** fluorescence scanning

IT **Proteins**, specific or class
 RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); DEV (Device component use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (NS3 (nonstructural, 3), of Korean hepatitis C virus; multipurpose diagnostic systems using **protein chips**)

IT Silanes
 RL: DEV (Device component use); USES (Uses)
 (aminoalkyl; multipurpose diagnostic systems using **protein chips**)

IT Immunoassay
 (app.; multipurpose diagnostic systems using **protein chips**)

IT Apparatus
 (automated, automatic **microarrayer** system, for prepg. **protein chips**; multipurpose diagnostic systems using **protein chips**)

IT Analytical apparatus
 (automated; multipurpose diagnostic systems using **protein chips**)

IT Analysis
 Analytical apparatus
 (biochem.; multipurpose diagnostic systems using **protein chips**)

IT Biotechnology
 (**biochips**; multipurpose diagnostic systems using **protein chips**)

IT Fluorescent substances
 (conjugates with antibodies; multipurpose diagnostic systems using **protein chips**)

IT Antibodies
 RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (conjugates, with fluorescent substances; multipurpose diagnostic systems using **protein chips**)

IT Disease, animal
 (diagnosis of; multipurpose diagnostic systems using **protein chips**)

IT Envelope **proteins**
 RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); DEV (Device component use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (gp41env, of HIV-1; multipurpose diagnostic systems using **protein chips**)

IT Antigens
 RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); DEV (Device component use); RCT (Reactant); THU (Therapeutic use); ANST

(Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (hepatitis C core, fusion **proteins** with NS3 antigen; multipurpose diagnostic systems using **protein chips**)

IT Optical scanners
 (high-speed fluorescence; multipurpose diagnostic systems using **protein chips**)

IT **Proteins**, specific or class
 RL: ARG (Analytical reagent use); BPR (Biological process); DEV (Device component use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
 (immobilized, **chips**; multipurpose diagnostic systems using **protein chips**)

IT Enzymes, biological studies
 RL: ARG (Analytical reagent use); BAC (Biological activity or effector, except adverse); BPR (Biological process); DEV (Device component use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
 (immobilized; multipurpose diagnostic systems using **protein chips**)

IT Antigens
 Receptors
 RL: ARG (Analytical reagent use); BPR (Biological process); DEV (Device component use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
 (immobilized; multipurpose diagnostic systems using **protein chips**)

IT Diagnosis
 (immunodiagnosis; multipurpose diagnostic systems using **protein chips**)

IT Polysiloxanes, uses
 RL: DEV (Device component use); USES (Uses)
 (modified; multipurpose diagnostic systems using **protein chips**)

IT Alkyl groups
 Biosensors
 Blood analysis
 Buffers
 Computers
 Diagnosis
 Drug screening
 Enzyme kinetics
 Fluorescence microscopy
 Functional groups
 Human immunodeficiency virus 1
 Immunoassay
 Membranes, nonbiological
 (multipurpose diagnostic systems using **protein chips**)

IT **Proteins**, general, analysis
 RL: ANT (Analyte); BPR (Biological process); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
 (multipurpose diagnostic systems using **protein chips**)

IT Antibodies
 RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (multipurpose diagnostic systems using **protein chips**)

IT Carbohydrates, uses
 Glass, uses
 Metals, uses
 Plastics, uses
 Polymers, uses
 RL: DEV (Device component use); USES (Uses)

(multipurpose diagnostic systems using **protein chips**)

IT Fusion **proteins** (chimeric **proteins**)
 RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); DEV (Device component use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (of NS3 and core antigens of hepatitis C virus; multipurpose diagnostic systems using **protein chips**)

IT gag **proteins**
 RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); DEV (Device component use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (p24gag, of HIV-1; multipurpose diagnostic systems using **protein chips**)

IT Animal
 Bacteria (Eubacteria)
 Fungi
 Hepatitis B virus
 Hepatitis C virus
 Human immunodeficiency virus
 Plant (Embryophyta)
 Virus
 (probe **proteins** as antigens of; multipurpose diagnostic systems using **protein chips**)

IT Receptors
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
 (screening for antagonists or ligands binding to; multipurpose diagnostic systems using **protein chips**)

IT Ligands
 RL: ANT (Analyte); BPR (Biological process); ANST (Analytical study); BIOL (Biological study); PROC (Process)
 (screening for; multipurpose diagnostic systems using **protein chips**)

IT Plates
 (tetragonal; multipurpose diagnostic systems using **protein chips**)

IT 497-19-8, Sodium carbonate, uses 7632-05-5, Sodium phosphate
 RL: NUU (Other use, unclassified); USES (Uses)
 (buffer; multipurpose diagnostic systems using **protein chips**)

IT 64-17-5, Ethanol, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (in **protein** immobilization; multipurpose diagnostic systems using **protein chips**)

IT 27072-45-3D, Fluorescein isothiocyanate, antibody conjugates
 RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (multipurpose diagnostic systems using **protein chips**)

IT 116-14-3, Tetrafluoroethylene, uses 7440-44-0D, Carbon, compds. 7631-86-9, Silica, uses 7631-86-9D, Silica, derivs. 9003-07-0, Polypropylene 9003-53-6, Polystyrene
 RL: DEV (Device component use); USES (Uses)
 (multipurpose diagnostic systems using **protein chips**)

IT 327634-78-6, 1: PN: WO0114425 SEQID: 1 unclaimed DNA 327634-79-7, 2: PN: WO0114425 SEQID: 2 unclaimed DNA 327634-80-0 327634-81-1 327634-82-2 327634-83-3 327634-84-4 327634-85-5 327634-86-6 327634-87-7 327634-88-8 327634-89-9
 RL: PRP (Properties)
 (unclaimed nucleotide sequence; multipurpose diagnostic systems using **protein chips**)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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- (6) Mendoza; BIOTECHNIQUES 1999, V27, P778 HCAPLUS
- (7) Nec Corp; EP 0818467 A2 1998 HCAPLUS

=> d his

(FILE 'HOME' ENTERED AT 10:25:39 ON 06 FEB 2002)
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FILE 'HCAPLUS' ENTERED AT 10:25:49 ON 06 FEB 2002

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L1 114 S E3-E14
E KASHANIN D/AU
E KELLEHER D/AU
L2 130 S E3-E9,E21,E22
E WILLIAMS V/AU
L3 141 S E3-E22
E VOLKOV Y/AU
L4 10 S E3-E4,E28
L5 389 S L1-L4
L6 5 S L5 AND ?ASSAY?
L7 4 S L5 AND (BIOCHEM?(L)METHOD?)/SC,SX
L8 9 S L6,L7
E ASSAY/CT
E E5+ALL
L9 0 S L1 AND L2-L4
L10 6 S L2 AND L3,L4
L11 0 S L3 AND L4
L12 4 S L5 AND ?MIGRAT?

FILE 'WPIX' ENTERED AT 10:30:12 ON 06 FEB 2002

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L13 24 S E3-E10
E KASHANIN D/AU
E KELLEHER D/AU
L14 7 S E3-E5
E WILLIAMS V/AU
L15 24 S E3-E16
E VOLKOV Y/AU
L16 240 S E4-E18
L17 295 S L13-L16
L18 8 S L17 AND G01N/IC,ICM,ICS,ICA,ICI
L19 1 S L17 AND C12Q/IC,ICM,ICS,ICA,ICI
L20 9 S L18,L19
L21 2 S (B12-K04? OR C12-K04? OR D05-H09)/MC AND L17
L22 2 S J04-?/MC AND L17
L23 9 S (Q233 OR M424 OR M740 OR N136)/M0,M1,M2,M3,M4,M5,M6 AND L17
L24 6 S L21-L23 NOT L20

FILE 'BIOSIS' ENTERED AT 10:37:35 ON 06 FEB 2002

E SHVETS I/AU
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E KASHANIN D/AU
E KELLEHER D/AU
L26 309 S E3-E12,E20,E21
E WILLIAMS V/AU
L27 220 S E3-E21
E VOLKOV Y/AU
L28 24 S E3-E8,E21
L29 556 S L25-L28
L30 198 S L29 AND (01004 OR 01006 OR 01052 OR 01054 OR 0250# OR 03502 O

L31 234 S L29 AND 00520/CC
 L32 241 S L29 AND CONFERENCE/DT
 L33 305 S L29 NOT L31,L32
 L34 223 S L33 NOT ARTICLE/DT
 L35 217 S L34 NOT (PATENT OR GENERAL REVIEW)/DT
 L36 215 S L35 NOT BOOK/DT
 L37 251 S L31,L32
 L38 3 S L37 AND ((FLOW CYTOMET? OR GENETIC)())ANALYSIS)/TI
 L39 2 S L38 NOT FORCES/TI
 L40 111 S L29 AND 02508/CC
 L41 54 S L40 NOT L37
 L42 11 S L41 AND (ADHESION MOLECULES OR CELL SEPARATION PROCEDURE OR E
 L43 2 S L39 AND L25-L42

FILE 'BIOSIS' ENTERED AT 10:55:47 ON 06 FEB 2002

L44 0 S L25 AND L26-L28
 L45 8 S L26 AND L27-L28
 L46 0 S L27 AND L28
 L47 111633 S 01004/CC
 L48 204437 S 01054/CC
 L49 3165057 S 0250#/CC
 L50 404407 S 32500/CC
 L51 375693 S 32600/CC
 L52 260501 S 12100/CC AND L47-L51
 L53 106 S ?BIOCHIP?
 L54 0 S L53 AND L29
 L55 19 S L53 AND L47-L51
 L56 0 S L53 AND L52
 L57 3 S BIO CHIP?
 L58 0 S L57 AND L29
 L59 1 S L57 AND L47-L52
 L60 20 S L55,L59
 L61 1165 S BIOINFORMATIC? OR BIO INFORMATI?
 L62 3017 S (HIGH OR RAPID)() (THROUGHPUT OR THROUGH PUT)
 L63 6344 S (HIGH OR RAPID)()SPEED
 L64 2280 S L47-L51 AND L61-L63
 L65 498 S L61-L63 AND L52
 L66 4 S L53,L57 AND L64-L65
 L67 20 S L60,L66
 L68 88 S L53,L57 NOT L67
 L69 34 S L68 NOT AB/FA
 SEL DN 8 19 23 24 28
 L70 5 S L69 AND E1-E5
 L71 54 S L68 NOT L69
 SEL DN 9 11 17 19 21 36 41
 L72 7 S L71 AND E6-E12
 L73 12 S L70,L72
 SEL DN L60 2 5 7 15 16 18 19
 L74 7 S L60 AND E13-E19
 L75 19 S L73,L74
 L76 19 S L75 AND (?CHIP? OR ?ARRAY? OR HIGH(L) (THROUGHPUT OR THROUGH P
 L77 18 S L76 AND (?ASSAY? OR METHOD?`OR ANALY?)
 L78 4 S L76 AND PROTEIN
 L79 2 S L76 AND (10054 OR 10064)/CC
 L80 19 S L76-L79

FILE 'MEDLINE' ENTERED AT 11:26:18 ON 06 FEB 2002

L81 75 S BIOCHIP? OR BIO CHIP?
 L82 428 S NANOCHIP? OR MICROCHIP? OR MICRO CHIP?
 L83 494 S L81,L82
 L84 339 S L83 AND PY<=2000
 L85 58 S L84 NOT AB/FA
 L86 281 S L84 NOT L85
 L87 22 S L86 AND A11./CT
 SEL DN 14 16 17 18
 L88 4 S L87 AND E20-E27

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      E BIOLOGICAL TRANSPORT+ALL/CT
L89      3 S E4+NT AND L84
L90      2 S L89 NOT ELECTRONICS/TI
L91      63 S L84 AND D12./CT
L92      2 S L88,L90 AND L91
L93      5 S L88,L90,L92
L94      61 S L91 NOT L93
          SEL DN 37 61
L95      2 S L94 AND E1-E4
L96      7 S L93,L95
L97      12 S L84 AND (MICROCHANNEL? OR MICRO CHANNEL?)
L98      53 S L84 AND ?CHANNEL?
L99      1 S L84 AND ?LAMINAR?
L100     54 S L97-L99
          SEL DN 3 14 36 37 50 54
L101     6 S L100 AND E5-E16
L102     12 S L96,L101
L103     1 S L83 AND ELONGAT?
          E ELONGAT?(L)?CHANNEL?
L104     386 S ELONGAT?(L)?CHANNEL?
L105     1 S L104 AND ?CHIP?
L106     6 S L104 AND ?ARRAY?
L107     7 S L105,L106
L108     216 S L104 AND A11./CT
L109     220 S L104 AND D12./CT
L110     290 S L108,L109
L111     4 S L110 AND L107
L112     12 S L102 AND L81-L111
L113     12 S L112 AND (?CHIP? OR ?CHANNEL? OR ?ARRAY?)
L114     8 S L113 AND (A11. OR D12. OR D13.)/CT
L115     3 S L113 AND (E1. OR G5.)/CT
L116     10 S L114,L115
L117     2 S L113 AND L1./CT
L118     12 S L112-L117
L119     8 S L118 AND E5./CT
L120     12 S L118,L119

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FILE 'MEDLINE' ENTERED AT 11:56:41 ON 06 FEB 2002

FILE 'HCAPLUS' ENTERED AT 11:57:14 ON 06 FEB 2002

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L121     1497 S BIOCHIP? OR BIO CHIP?
L122     1199 S GENE(L)CHIP
L123     1260 S PROTEIN(L)CHIP
L124     2733 S L121-L123
L125     150 S L124 AND COAT?
L126     71 S L125 AND PROTEIN(L)COAT?
L127     38 S L126 AND 9/SC,SX
          SEL DN 3 6 8
L128     3 S L127 AND E1-E3
L129     3 S L128 AND L121-L128
L130     3 S L129 AND (?CHIP? OR ?ARRAY? OR ?CHANNEL? OR ?RESERVOIR?)

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FILE 'HCAPLUS' ENTERED AT 12:14:42 ON 06 FEB 2002